

REMARKS

Claims 1, 3-9 and 11-22 are in this application and are presented for consideration. By this Amendment, Applicant has amended claims 1, 3-5 and 11. Claims 2 and 10 have been canceled. Applicant has also added new claims 12-22.

The abstract has been objected to because it states "-Fig. 2-". Applicant has amended the abstract as shown above to delete the reference made to Figure 2 in the abstract.

Claims 2 and 4 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has canceled claim 2. Claim 4 has been amended paying close attention to the Examiner's remarks. Applicant wishes to thank the Examiner for the careful reading of the claims. It is Applicant's position that the claims as now presented are clear and fulfill the requirements of the statute.

Claims 1-3, 5, 6 and 9-11 have been rejected under 35 U.S.C. 102(b) as being anticipated by Rutschle et al. (US 5,453,068).

The present invention relates to a machine tool. The machine tool comprises a work carrier with a working area. A tool spindle is detachably connected to a tool and is displaceable in an x-y plane. A machine housing having a plurality of walls surrounds the work area. The machine tool further comprises a tool magazine. The tool magazine includes a magazine housing and an endless chain having tool-holding fixtures. The magazine housing has an angular shape and has a top portion or limb and a bottom portion or limb. The bottom portion

extends from the top portion in a direction and covers one of the side walls. The top portion of the magazine housing has a bottom side that faces in the direction of the working area. The top portion has a closable tool-change opening defined by the bottom side. The tool-change opening in the top portion enables a change of tools between the chain and the tool-holder spindle above the working area. This advantageously reduces the width of the machine tool. A tool-fitting aperture is located in a bottom area of the bottom portion of the magazine housing at a height of one to two meters above the ground or any other distance that makes it easy to reach the tool-fitting aperture. The present invention advantageously provides a space-efficient machine tool that has easy access to the magazine with tools. The present invention advantageously reduces the amount of space taken up by the machine tool since one portion of the tool magazine is located above the working area. Another portion of the tool magazine extends vertically so that an operator can easily access the tool magazine to change the tools on the chain. This advantageously reduces manufacturing costs since the amount of time required to change the tools is significantly reduced compared with conventional techniques.

Rütschle et al. discloses a machine tool 10 having a spindle head 22 with retaining arms 25. The retaining arms 25 support a tool magazine 26 that is L-shaped. The tool magazine 26 contains a continuous path 27 for tools 24a, 24b. The arm 28 of the tool magazine 26 extends in the X-axis and the arm 29 of the tool magazine 26 extends in the Y-axis. The tool magazine 26 is joined only to the spindle head 20 and is displaced along with in the Z-axis. The tool magazine 26 moves vertically together with the spindle head 22. The tool magazine 26 consists of tool holders that are transported in a chain 78. The chain 78 consists of chain links 79 that

are joined to one another by chain pivots 80. Each chain link 79 consists of a cylindrical sleeve 85 that is open at the bottom, as indicated at 86. Each sleeve 85 thus forms a storage location 83 for a tool 24. At the top end, the sleeve 85 is closed off by a cover 87. The cover 87 is pivotable about the axis of the chain pivot 80. The tools 24e are inserted first into a sheath 95 that is then in turn introduced into the sleeves 85.

Rütschle et al. fails to teach and fails to suggest the combination of a magazine housing of a tool magazine that has a substantially horizontal top limb and a bottom limb that extends from the top limb in a downward direction and extends along a side wall of a machine housing. Rütschle et al. merely discloses a tool magazine 26 that is disposed above the working area. However, the arm 28 of the tool magazine 26 of Rütschle et al. does not extend in a downwards direction from the arm 29 of the tool magazine 26 such that the arm 28 extends along one of the side walls of the machine housing. In contrast to Rütschle et al., the bottom limb of the magazine housing of the present invention extends along one of the side walls of the machine housing. This is significant in the present invention because the tool-fitting aperture is located in the bottom area of the bottom limb. This advantageously provides easy access to the tools when an operator of the tool machine has to change the tools of the machine. Compared with the present invention, the tool magazine 26 of Rütschle et al. is located above the working area, which disadvantageously makes it extremely difficult for the operator to load the chain with tools due to the height of the tool-holding fixtures. As such, Rütschle et al. takes a different approach and fails to suggest important aspects of the claimed combination.

Further, Rütschle et al. is void of any suggestion or teaching for the combination of a

tool-fitting aperture that is located in a bottom area of a bottom limb of a magazine housing. At most, Rüttschle et al. discloses each chain link 79 consists of a cylindrical sleeve 85 that is open at the bottom, as indicated at 86. However, neither arm 28 nor arm 29 of the tool magazine 26 of Rüttschle et al. has an opening that is located at a low position to allow an operator to load the tool magazine 26 with tools as claimed. In contrast, the bottom limb of the tool magazine has a tool-fitting aperture that is located at a position that is easily accessible, such as one to two meters above the ground, so that an operator can quickly load the endless chain with tools. This advantageously reduces manufacturing time because the tools can be changed more easily and more efficiently. Rüttschle et al. fails to disclose such cost reducing advantages because Rüttschle et al. fails to suggest and fails to teach a tool-fitting aperture that is located at a bottom area of a bottom limb of a magazine housing. As such, the prior art as a whole takes a different approach and does not teach the features of the claimed combination. Accordingly, Applicant respectfully requests that the Examiner favorably consider claim 1 and all claims that depend thereon.

Claim 4 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Rüttschle et al. As previously discussed above, Rüttschle et al. fails to teach or suggest a magazine housing with a bottom limb that extends downward such that a tool-fitting aperture is located in a bottom area of the bottom limb. The references together do not suggest the combination of features claimed. One of ordinary skill in the art is presented with various concepts, but these concepts do not provide any direction as to combining the features claimed. All claims define over the prior art as a whole.

Applicant has added new claims 12-22. New claim 12 is based on claim 1 and more clearly defines the x-y plane. New independent claim 13 is based on the allowable subject matter noted in the rejection. Specifically, claim 13 is a combination of the features found in original claims 1, 5, 6 and 7. It is Applicant's position that new independent claim 13 is allowable as presented. Applicant has also added new independent claim 14. Claim 14 provides for similar features found in claim 1 and new dependent claim 12, but in different claim language. New claims 15-20 are based on new independent claim 14 and are similar to claims 4-9. New dependent claims 21 and 22 are based on new claim 14 and clarify the location of the tool-fitting aperture on the bottom portion of the magazine housing. Applicant respectfully requests that the Examiner favorably consider new claims 12-22.

Favorable consideration on the merits is requested.

Respectfully submitted
for Applicant,



By: _____
John James McGlew
Registration No. 31,903
McGLEW AND TUTTLE, P.C.

- and -



By: _____

Brian M. Duncan
Registration No. 58,505
McGLEW AND TUTTLE, P.C.

JJM:BMD
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DATED: September 27, 2007
BOX 9227 SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-9227
(914) 941-5600

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